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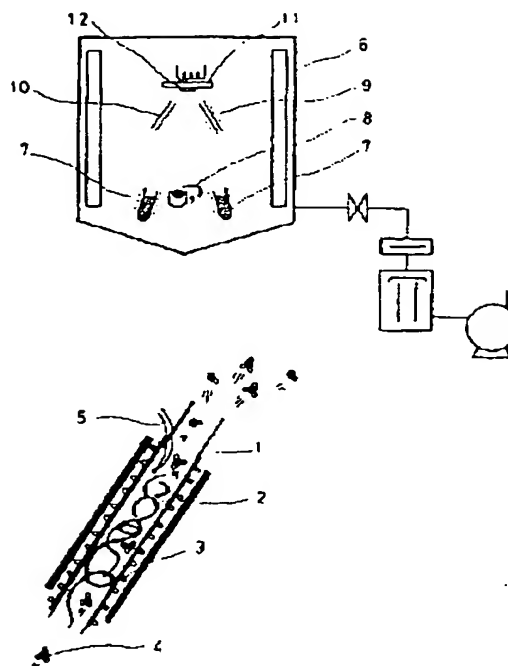
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TITLE : PRODUCTION OF NITRIDE FILM



ABSTRACT : PURPOSE: To stably form a nitride film having a composition extremely close to stoichiometric composition on a substrate by heating and decomposing a gaseous nitrogen compound in vacuum in a cracking gas cell and generating highly active nitrogen.

CONSTITUTION: A substrate composed of Si,  $\text{Al}_2\text{O}_3$ , SiC, quartz glass, etc., as a substrate 12 to be filmed is fixed to a heater-containing holder 11 in a vacuum vessel 6, and a crucible 7 containing an element to be combined with N is disposed in the position opposite to the substrate 12 and the above element in the crucible 7 is heated and vaporized by electron beam, etc. A gaseous N compound, e.g., a gaseous matter of  $\text{NH}_3$ ,  $\text{N}_2\text{H}_4$ ,  $\text{N}_2\text{H}_2$ , etc., is introduced into a cracking gas cell 9 and decomposed by heating with a heater 3 in the presence of a catalyst 2, such as  $\text{Al}_2\text{O}_3$  and Fe, in the inner part to produce  $\text{N}_2$  gas having extremely high activity, and, a nitride film of BN, AlN, GaN, etc., formed by the reaction of this  $\text{N}_2$  gas with the gas of element, such as B, Al, and Ga, produced from the crucible 7 can be formed on the surface of the substrate 12.

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